The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JOHN M. WHITE and AKIHIRO HOSOKAWA

Appeal No. 2006-2725
Application No. 09/982,406
Technology Center 3600

Decided: June 29, 2007

Before TERRY J. OWENS, JENNIFER D. BAHR, and STUART S. LEVY, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellants appeal from a rejection of claims 8, 14, 15, 17-21 and 47-52, which are all of the pending claims.

THE INVENTION

The Appellants claim an apparatus for supporting a substrate in a chamber. Claim 8 is illustrative:

8. An apparatus for supporting a substrate, comprising:
a chamber body having at least one substrate access port;
at least one support member disposed in the chamber body;
at least one socket disposed in the support member and having a ball support surface and a formed end; and
a ball rotatably disposed on the ball support surface and retained in the socket by the formed end, the ball adapted to contact and support the substrate in a spaced-apart relation to the support member.

THE REFERENCES

Hansson	US 4,621,936	Nov. 11, 1986
Okayama (as translated)	JP 2-121347	May 9, 1990
Toshio[1] (as translated)	JP 2000-353737	Dec. 19, 2000
Young	US 6,677,594 B1	Jan. 13, 2004

THE REJECTIONS

The following rejections are before us on appeal:[2] claims 8 and 15 under 35 U.S.C. § 102(a) as anticipated by Toshio; claims 14, 47 and 51 under 35 U.S.C. § 103 as obvious over Toshio in view of Young and Hanson; claims 8, 15, and 17-19 under 35 U.S.C. § 103 as obvious over the combined disclosures of Okayama and Young; and claims 14, 47 and 51 under 35 U.S.C. § 103 as obvious over the combined disclosures of Okayama, Young and Hansson.

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[1]The Examiner and the Appellants refer to this reference as "Toshio," the inventor's first name. For consistency, we likewise do so.

[2] The Appellants state that nine additional rejections involving only dependent claims (17-21, 48, 49, 50 and 52), all but one of the additional rejections relying upon US 5,955,858 to Kroeker or US 4,706,793 to Masciarelli, are not under review on appeal (Br. 8; Reply Br. 3). The Appellants state that those claims are patentable if the independent claim (8 or 47) from which they depend is patentable (Reply Br. 3).

OPINION

We affirm the aforementioned rejections. The Appellants do not separately argue dependent claims 14, 15, 17-19, and 51 (Br. 9-12). We therefore limit our discussion to independent claims 8 and 47. *See* 37 C.F.R. § 41.37(c)(1)(vii)(2004).

Rejections under 35 U.S.C. § 102(a) over Toshio and under 35 U.S.C. § 103 over Toshio in view of Young and Hanson

Toshio discloses a substrate aligning device for transporting a substrate from a substrate processing part to another processing part (Toshio, ¶ 0007). The device includes a substrate supporting arm (3) having therein a supporting pin (11) that supports a rolling ball (9) (Toshio, ¶ 0019; fig. 3). The upper end of the rolling ball protrudes from a top plate (10) bolted onto the substrate supporting arm (Toshio, ¶ 0020; fig. 3). "In order to have the function of preventing fall of rolling ball (9) and to fix the position of ball supporting pin (11), a hole is formed through it [the top plate] in a size that ensures that rolling ball (9) cannot be pulled from the upper end surface of top plate (10)" (Toshio, ¶ 0020).[3]

The Appellants argue that Toshio lacks a formed end to retain the ball in the socket and that "[a]dhesion of the ball 9 to the substrate 1 in *Toshio* would lift the ball 9 out of the top plate 10 based on Figures 3 and 4 in *Toshio*" (Br. 9). That lifting out would not occur because the hole in Toshio's top plate is sized such that the rolling ball cannot be pulled from the top plate's upper surface (¶ 0020). Toshio therefore has a formed end (the hole in the top plate) to retain the ball 9 in the socket.

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[3] We need not address Young and Hansson.

The Appellants argue that Toshio's top plate is not part of a socket but, rather, is a separate piece (Reply Br. 4). The Appellant indicates that the socket's formed end can be a retaining ring (606) disposed in a sidewall of the socket (Spec. 0047; fig. 6C). Hence, the broadest reasonable interpretation of "at least one socket ... having a ... formed end" in claim 8, in view of the Appellants' Specification, *see In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989); *In re Sneed*, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983), encompasses a socket and its formed end that are separate, joined pieces. Consequently, the Appellant's claim term "formed end" encompasses Toshio's top plate.

The Appellants argue that Toshio does not disclose that the substrate support is in a chamber body (Reply Br. 4). Toshio's disclosures that the apparatus is for aligning substrates used in making color filters for liquid crystal display elements and that even dirt from scratches caused by sliding between a substrate and its support is unacceptable (Toshio, ¶¶ 0001, 0004-0005) would have indicated to one of ordinary skill in the art that the support member is in a chamber to provide the required cleanliness.

The Appellant argues that the applied references do not disclose or suggest a ball having a surface roughness of 4 microinches or less as required by the Appellants' claim 47 (Br. 10). Toshio's disclosure that sliding between the substrate and the ball can form scratches or dirt that cause poor product quality (Toshio, ¶¶ 0004, 0005, 0017, 0018) would have led one of ordinary skill in the art to make the surface of the ball as smooth as reasonably possible, such as 4 microinches or less surface roughness, to minimize scratches and dirt formation due to sliding.

For the above reasons we are not convinced of reversible error in the rejections over Toshio and over Toshio in view of Young and Hanson. Rejections under 35 U.S.C. § 103 over the combined disclosures of Okayama and Young, and over the combined disclosures of Okayama, Young, and Hansson.

Okayama discloses a device for positioning a semiconductor wafer in a particular direction before supplying it to a process such as inspection or etching (Okayama 2-3). The device includes a holder (10) having ball bearings (11) therein that support a rotatable ball (7) (Okayama 6). The holder is shown as having a lip that holds the rotatable ball in the holder (fig. 3(a)).

The Appellants argue that the applied references do not teach, show or suggest all of the limitations of claim 8 (Br. 10-12), but the Appellants do not provide a substantive argument as to what the Appellants consider the references to be lacking.

The Appellants argue that the applied references do not teach, show, or suggest a ball with a surface roughness of 4 micro-inches or less (Br. 11-12). Okayama's disclosure that the coefficient of friction between the balls and the wafer is to be low to prevent dust generation (Okayama 5, 8-9) would have led one of ordinary skill in the art to make the ball surface roughness as low as reasonably possible, such as 4 micro-inches or less, to avoid dust generation.

We therefore are not convinced of reversible error in the rejections over the combined disclosures of Okayama and Young and over the combined disclosures of Okayama, Young, and Hansson.

DECISION

The rejections of claims 8 and 15 under 35 U.S.C. § 102(a) over Toshio, claims 14, 47, and 51 under 35 U.S.C. § 103 over Toshio in view of Young and Hanson, claims 8, 15, and 17-19 under 35 U.S.C. § 103 over the combined disclosures of Okayama and Young, and claims 14, 47, and 51 under 35 U.S.C. § 103 over the combined disclosures of Okayama, Young and Hansson are affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(2006).

AFFIRMED

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